What is claimed is:

1. An apparatus comprising:

    a despreader to despread data within a baseband code division multiple access (CDMA) signal, said data being associated with a desired user; and

    a despreading sequence generator to generate a joint equalization/multi-user detection (MUD) despreading sequence for use by said despreader to despread said data.

2. The apparatus of claim 1, wherein:

    said despreading sequence generator treats active users as being within one of two groups, a first group for users whose signature sequences are assumed to be known to the apparatus and a second group for users whose signature sequences are assumed to be unknown to the apparatus.

3. The apparatus of claim 2, wherein:

    said despreading sequence generator generates said joint equalization/MUD despreading sequence based on a quantity of users in said first group and a quantity of users in said second group.

4. The apparatus of claim 2, wherein:

    said apparatus processes user signals associated with users in said first group using MUD-type processing and user signals associated with users in said second group using equalizer-type processing.

5. The apparatus of claim 2, wherein:

    said apparatus behaves as a RAKE receiver when a quantity of users in said first group is 1 and a quantity of users in said second group is 0.

1   6.   The apparatus of claim 2, wherein:

2   said apparatus behaves as a minimum mean square error (MMSE) equalizer

3   when said first group includes only said desired user and said second group includes all

4   other users associated with the same base station as said desired user.

1   7.   The apparatus of claim 2, wherein:

2   said apparatus behaves as a multi-user detector (MUD) when said first group

3   includes all active users and said second group includes no users.

1   8.   The apparatus of claim 2, wherein:

2   active users are assigned to said first and second groups based on a

3   predetermined assignment criterion.

1   9.   The apparatus of claim 8, wherein:

2   said predetermined assignment criterion is user-definable.

1   10.   The apparatus of claim 8, wherein:

2   said predetermined assignment criterion places users associated with a serving

3   base station within said first group and users associated with other base stations within

4   said second group.

1   11.   The apparatus of claim 8, wherein:

2   said predetermined assignment criterion places users having stronger received

3   signals within said first group and users having weaker received signals within said

4   second group.

1   12.   The apparatus of claim 1, further comprising:

2   a chip rate sampler to sample said baseband CDMA signal at a chip rate before

3   said signal reaches said despreader.

1   13.   The apparatus of claim 1, further comprising:

2   a channel decoder to decode an output of said despreader.

1   14.   The apparatus of claim 13, further comprising:

2   a feedback path from an output of said channel decoder to allow decoded

3   information to be re-encoded, interleaved, and re-modulated for use in interference

4   cancellation.

1   15.   A method for use in connection with a code division multiple access (CDMA)

2   receiver, comprising:

3   assigning individual active users to either a first group or a second group; and

4   generating a joint minimum mean square error (MMSE) equalization and multi-

5   user detection (MUD) despreading sequence based on a distribution of active users

6   within said first and second groups.

1   16.   The method of claim 15, wherein:

2   said first group includes users whose signature sequences are assumed known to

3   a receiver and said second group includes users whose signature sequences are assumed

4   unknown to the receiver.

1   17.   The method of claim 15, wherein:

2   assigning individual active users includes assigning users based upon a

3   predetermined assignment criterion.

1   18.   The method of claim 17, wherein:

2   said predetermined assignment criterion is user definable.

1   19.   The method of claim 15, wherein:

2   assigning individual active users includes assigning users associated with a

3   serving base station to said first group and assigning users associated with other base

4   stations to said second group.

1   20.   The method of claim 15, wherein:

2   assigning individual active users includes assigning users to said first and

3   second groups based on received signal strength.

1   21.   The method of claim 15, further comprising:

2   processing a received CDMA signal using said joint MMSE equalization and

3   MUD despreading sequence.

1   22.   The method of claim 21, wherein:

2   processing includes performing RAKE receiver processing on said CDMA

3   signal when said first group includes only a desired user and said second group includes

4   no users.

1   23.   The method of claim 21, wherein:

2   processing includes performing MMSE MUD processing when said first group

3   includes all active users and said second group includes no users.

1   24.   The method of claim 21, wherein:

2   processing includes performing MMSE equalization when said first group

3   includes only said desired user and said second group includes all other active users

4   associated with the same base station as said desired user.

1   25.   The method of claim 21, wherein:

2   processing includes performing a combination of MMSE equalization and

3   MMSE MUD processing when both said first group and said second group include

4   multiple users.

1   26.   An article comprising a storage medium having instructions stored thereon that,

2   when executed by a computing platform, result in:

3   assigning, within a code division multiple access (CDMA) receiver, individual

4   active users to either a first group or a second group; and

5   generating a joint minimum mean square error (MMSE) equalization and multi-

6   user detection (MUD) despreading sequence based on a distribution of active users

7   within said first and second groups.

1   27.   The article of claim 26, wherein:

2   said first group includes users whose signature sequences are assumed known to

3   the CDMA receiver and said second group includes users whose signature sequences

4   are assumed unknown to the CDMA receiver.

1   28.   The article of claim 26, wherein said instructions, when executed by said

2   computing platform, further result in:

3   processing a received CDMA signal using said joint MMSE equalization and

4   MUD despreading sequence.

1   29.   A system comprising:

2   multiple receive antennas to receive a code division multiple access (CDMA)

3   signal from a wireless channel;

4   a despreader to despread data within a baseband version of said CDMA signal,

5   said data being associated with a desired user; and

6   a despreading sequence generator to generate a joint equalization/multi-user

7   detection (MUD) despreading sequence for use by said despreader to despread said

8   data.

1   30.   The system of claim 29, wherein:

2   said despreading sequence generator treats active users as being within one of

3   two groups, a first group for users whose signature sequences are assumed to be known

4   to the system and a second group for users whose signature sequences are assumed to

5   be unknown to the system.

1   31.   The system of claim 29, wherein:

2   said despreading sequence generator generates said joint equalization/MUD

3   despreading sequence based on a quantity of users in said first group and a quantity of

4   users in said second group.

1   32.   The system of claim 29, wherein:

2   said system processes user signals associated with said first group using MUD-

3   type processing and user signals associated with users in said second group using

4   equalizer-type processing.

1   33.   The system of claim 29, further comprising:

2   a chip rate sampler to sample said baseband version of said CDMA signal at a

3   chip rate before it reaches said despreader.

1   34.   A method comprising:

2   receiving a code division multiple access (CDMA) signal from a wireless

3   channel; and

4   detecting user data within said CDMA signal, wherein detecting user data

5   includes processing said CDMA signal using a combination of minimum mean square

6   error (MMSE) equalization and MMSE multi-user detection (MUD) techniques.

1   35.   The method of claim 34, wherein:

2   processing said CDMA signal includes:

3   obtaining a joint MMSE equalization and multi-user detection (MUD)

4   despreading sequence; and

5   despreading said user data within said CDMA signal using said joint

6   MMSE equalization and MUD despreading sequence.

1   36.   The method of claim 35, comprising:

2   channel decoding said user data after said despreading to generate decoded data;

3   and

4   using at least some of said decoded data to perform interference cancellation.

1   37.   The method of claim 34, comprising:

2   converting said CDMA signal from a radio frequency (RF) representation to a

3   baseband representation before said processing.

1   38.   The method of claim 37, comprising:

2   sampling said baseband representation of said CDMA signal at a chip rate

3   before said processing.